# ENGINEERING NEWS-RECORD

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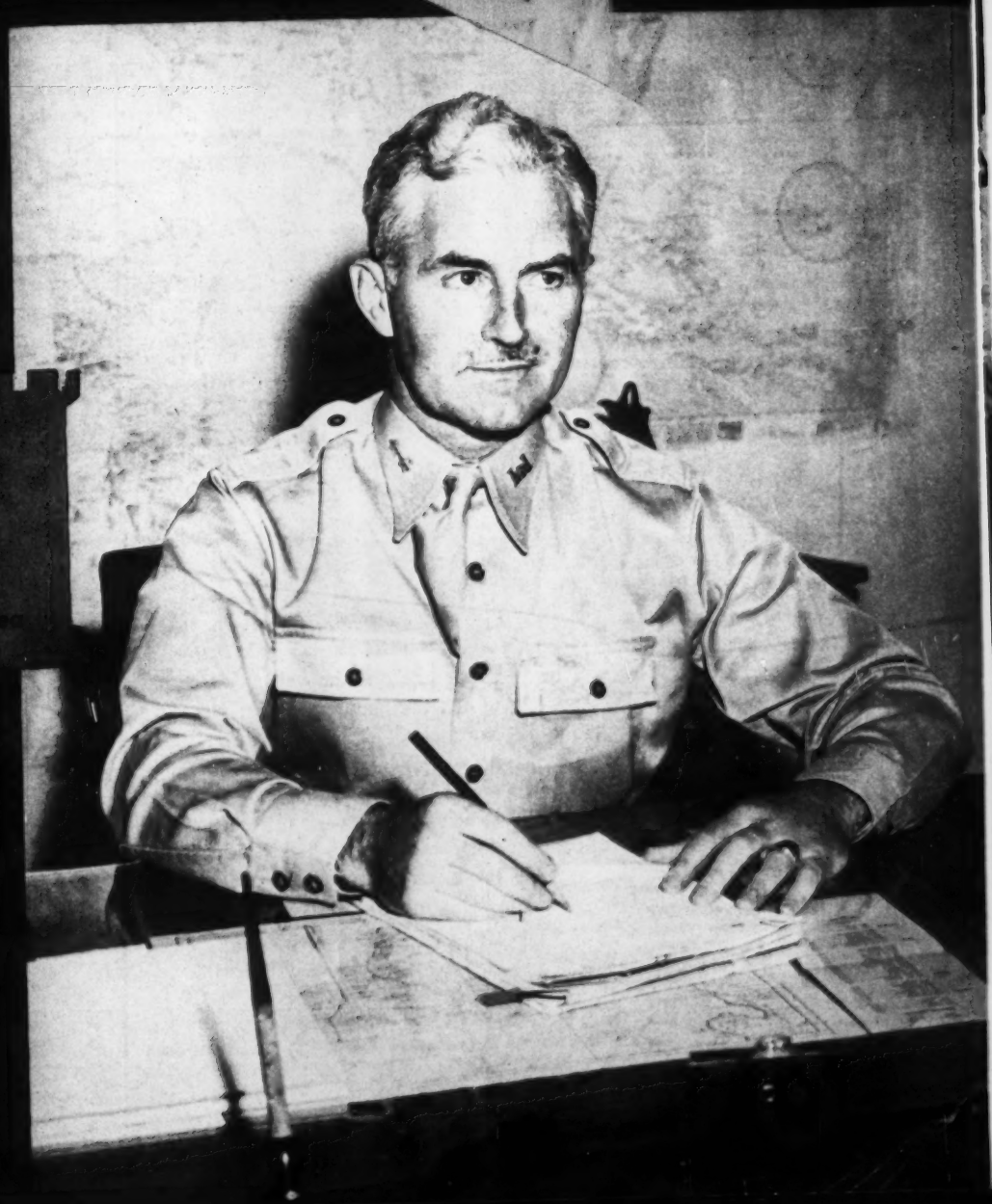


# ON GUARD

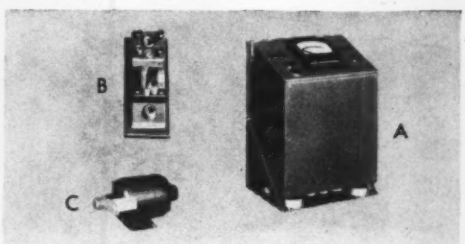
## *at Advance Base X*

By J. P. Smith, Industrial Engineering Division, General Electric Company

*ON GUARD against crippling accidents at floating drydocks throughout the world is a tiny gage no larger than half the size of a cigarette package. This gage protects one of the busiest pieces of equipment on the docks—the revolving-boom-type crane.*

Every craneman knows the difficulty of determining the weight he is to handle, and the radius at which he can swing the boom. If he is overcautious, he hesitates to handle loads that the crane can safely manage, and thereby slows the work—in this case the servicing of ships. If he becomes overzealous and picks up more than the crane can safely handle, he runs the risk of overturning the crane, ruining material, and losing lives.

### *The crane-stability gage enters the picture*




This gage (components shown in picture) has removed the necessity for guesswork in crane operation. Now, by glancing at an indicating instrument (A) the operator can determine whether he is "safe," or getting "out of bounds." It is possible even to interlock the crane-stability gage with the electric controls of the crane in such a way that the operator will automatically be prevented from lowering the boom or hoisting the load if the gage indicates an overload.

The load causes stretch of one of the crane's structural members to which the magnetic strain gage (B) is attached. This stretch is measured accurately by the gage by the changing of the gage's .005-inch air gap, which in turn causes movement of a pointer over the five-inch scale of the instrument near the operator.

The boom-angle compensator (C), which measures the boom angle, constantly corrects the reading as the radius changes. Thus the operator knows, at any radius, when he is handling his maximum safe load.

### *What the crane-stability gage does*

1. Gives the operator a continuous accurate indication of crane stability at all times.
2. Prevents unsafe operation by giving an alarm automatically when the load limit is reached. Also, the gage can often be interlocked with the crane controls.
3. Measures crane stability when *the load is stationary or in motion.*

**In thus eliminating one of the hazards of crane operation, G-E has enabled workers in the heavy construction industry to obtain maximum output from expensive equipment, with less danger to life and material. Whenever you have an electrical problem, call on G-E engineers. They will be glad to work with you.** ***General Electric Company, Schenectady 5, N. Y.***

★

*Every week 192,000 G-E employees purchase more than a million dollars' worth of War Bonds.*

★

**GENERAL ELECTRIC**

655-36-8498

The Week In Engineering and Construction

GINEERING NEWS-RECORD • APRIL 27, 1944 • VOLUME 132 • NUMBER 17

# Construction restrictions on highways eased by WPB

## our types of road and street work may be started ithout authorization. Wide variety of maintenance nd repair operations permitted.

e War Production Board on April ok the regulation of highway con- tion out of WPB Order L-41, which lates construction in general, and d a special order, L-41-E, con- ed solely with public highway con- tion.

e new order covers any highway reet open to the public and con- ted and maintained by any federal, territorial, county, city, district, ther governmental agency. Con- tion includes bridges, grade separa- culverts, storm drains, safety and ol devices, curbs, gutters, side- and other appurtenances.

hereas formerly no new construc- could be started without specific authorization, four types of high- and street work may now proceed ut permission, as follows:

jects costing $5,000 per mile or where the total cost does not ex- $25,000; access roads to raw mate- when such projects are certified by as essential to the war effort; and ay construction owned by the , Navy, Maritime Commission, Shipping Administration, Coast d, Marine Corps, Civilian Aeronau- Authority, Coast and Geodetic y, or the Panama Canal.

### Prohibited construction

cept for the above, all public high- and street construction is pro- d without specific WPB authoriza- Application for the latter is to be through the state highways de- ents by the governmental agency nsible for construction. Such ap- ions for authority to construct pub- ghway or street, form PR. 1-PA. e obtained either from state high- departments or from the Public Administration. The same ap- ion covers preference ratings and lled materials allotments if these are required for the construction work.

In determining whether or not construction may be started without WPB permission, cost is figured in the same way as provided in L-41 for other types of construction. Thus cost of used materials or fixtures may be disregarded, cost of new materials or fixtures obtained without buying them must be included and labor must be included if paid for. Contractors fees are included, but architect's and engineer's fees, cost of administration and right-of-way are not; the cost of all contiguous work on the same project is included.

The new order states that authorization is not required for either maintenance or repair of highways or streets.

Maintenance is defined as work necessary to keep surfaces, shoulders embankments, slopes, structures and rights-of-way in a safe and serviceable condition, and includes blading and shaping surfaces and shoulders, cleaning ditches and waterways, and patching.

### Repair work defined

Repair is described as work necessary to make a damaged or deteriorated portion of a highway or structure serviceable, or that necessary to restore it to its original condition. Where road surfaces are rehabilitated, the work must be done on existing line and grade, in order to classify it as repair. The following types of treatment can be used in repairing surfaces: Application of dust palliatives and bituminous preservative on gravel or earth roads; resurfacing not over one and a half inches in thickness for bituminous-surfaced roads; for concrete or brick roads, the application for wearing courses not to

(*Continued on next page*)

## War Department favors competitive bids

Award of construction contracts on a competitive bid basis has to a very large extent replaced the cost-plus-a-fixed-fee method which has been resorted to by the War Department to a considerable extent during the war. According to Lieut. Col. Josef Diamond, acting chief of the Contracts and Claims Branch of the Office of Chief of Engineers, the cost-plus-a-fixed-fee contract is now seldom used.

Whenever feasible, he says, construction contracts will be made on a fixed-price rather than on a fixed-fee-basis, in accordance with War Department procurement regulations.

A step was taken recently, according to Col. Diamond, which indicates a return to nearly normal competitive procedure. That is the reinstatement of a performance bond requirement in connection with bids. The number of contracts awarded on the competitive bid basis is now sufficient to justify this move. Without it, the War Department had to make individual investigation of the financial status of bidders.

### Navy department practice

In connection with changes in contracting procedures, it is also pertinent to recall that as early as a year ago the Navy Bureau of Yards and Docks, which had pioneered in the use of the cost-plus-a-fixed-fee contract, and had used it on jobs totaling nearly 4 billion dollars, discontinued its use in favor of negotiated lump-sum contracts. At that time, Vice Admiral Moreell, chief, Bureau of Yards and Docks, stated that the decision reflected a change in the urgency of Navy construction work, so that time usually was available for preparation of plans and specifications. When such time had not been available, the fixed fee form of contract had been necessary, and had worked satisfactorily.

exceed four inches in nominal thickness for non-rigid types, or five inches for rigid types.

Repair does not mean reconstruction or replacement, and does not include work which represents improvement on, nor departure from, the original type of construction. Reconstruction of foundation, base and surface is not considered repair except as it may be incidental to patching preliminary to resurfacing. Replacement of destroyed bridges is classed as construction, rather than repair.

Whether or not work can be classed as maintenance and repair depends on the kind of work and not on the methods used nor on how work is financed. For example, the repair of a bridge floor is a repair operation even though it is done by a contractor and financed from the construction budget. On the other hand, the replacement of an old bridge with a new one is construction, not repair, even though the work is done with repair maintenance forces and is financed with maintenance funds.

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## Pennsylvania acting on stream cleanup program

Looking toward an active postwar program of pollution abatement, the Sanitary Water Board of Pennsylvania began last week a series of public hearings on stream cleanup measures. Meetings with municipal officials were held in Reading, Easton and Philadelphia.

In Philadelphia the board heard protests from navy yard officials who declared that pollution of the Delaware and Schuylkill Rivers has become so great that "the stench sometimes drives men from their work." The city of Philadelphia is now seeking court approval of a sewer rental plan to finance a $42,000,000 sewage disposal plant, as noted elsewhere on this page.

H. E. Moses, chief engineer of the State Health Department, foresees a huge postwar program of municipal and industrial waste treatment in Pennsylvania. While he was not yet ready to venture an estimate in dollars, he said there were projects for Pittsburgh and Philadelphia that would total over a hundred million dollars. Several hundred smaller communities also will be faced with the need for providing treatment facilities if unhealthful conditions are to be eliminated.

## Midwest streams near record flood stages

Floods in southern Illinois, Kansas and Missouri have already caused considerable damage and if heavy rains continue threaten to top record crests of high waters in similar areas just a year ago. Peoria and Beardstown on the Illinois and Vandalia on the Kaskasia are among many towns menaced in Illinois. At Peoria the stage on Tuesday was 22.3 or 6.5 ft. below last year's crest, and at Beardstown the river was less than 5 ft. below the protecting wall that was topped 2 ft. last year, though the city was saved by sandbagging. Crests 2 to 3 ft. above Tuesday levels are expected last of this week, barring further rain.

In Missouri local floods attained serious proportions due to heavy rains; 6.3 in. fell at St. Louis in the 24-hr. period ending last Sunday morning, which is a record for April. The Mississippi at St. Louis reached 34.3 ft. on April 25, which is 4.3 ft. above flood stage. A crest of 37 ft. is expected by April 29. Last year's flood reached 38.95 ft. and the record is 41.3 ft. The Missouri at St. Charles reached 31.8 ft. on April 25, or 6.8 ft. over flood stage. It is expected to go to 34.5.

The Mississippi between Alton and Cairo has broken low levees in several places, but a week-end crest 1 ft. lower than 1943 record is expected to minimize further damage. State militia and federal troops have been called to southern Illinois danger points.

Parts of Wichita and Ottawa, Kan., have been flooded by the Arkansas and Marias de Cygnes rivers. Blue and Kaw rivers are threatening Kansas City and Lawrence, but all Kansas streams are reported falling. Railroad service is disrupted in the Kansas area.

## Over 4,000 workers needed for western job

Under Secretary of War Robert P[atterson] is asking the American Federation of Labor to help recruit several thousand workers for an important project at Pasco, Wash. The contract is held by E. I. du Pont de Nemours. Neither type nor cost is made public. Work has been under way for some time, and it is understood that it will last six months longer.

Workers are being recruited generally, except from the South Atlantic States—not there because of expected early local requirements. Pasco needs 4,000 unskilled laborers at $1.00 per hour, 750 electrical workers at $1.[illegible], 750 millwrights at $1.40, 320 welders at $1.20 to $1.62½, and 75 welders at $1.80 per hour. There will be calls for other types of workers later. Recruiting is through local U. S. employment service offices.

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## Congress gets new bill for highway construction

Representative Elmer H. Wene[illegible] New Jersey has introduced into Congress a substitute measure for the pending three billion dollar postwar highway construction bill. The new bill, H. R. 4628, reduces the authorization for appropriation to $2,010,000,000, sets up a different method of apportionment and establishes a new basis for matching federal funds with state money. Hearings were held on the bill April [illegible] with highway officials from Connecticut, Massachusetts, New York, Pennsylvania, and New Jersey testifying in favor.

## Philadelphia adopts a sewer rental ordinance

To provide funds for a $42,000,000 sewer and sewage treatment program, the Philadelphia City Council adopted a sewer rental ordinance on April 21. Although promptly signed by the mayor, the ordinance cannot become effective until its validity is tested in the courts.

A sliding scale of charges, based on water consumption, will determine the rents. The rates range from a charge of 100 percent on domestic water consumer accounts to 50 percent for [illegible] sale or industrial users. It is anticipated that revenue from the sewer rents not only will support the $42,000,000 improvement program but also will make it possible to finance an existing $55,000,000 sewer debt; the latter now forms part of the general city debt.

Opposition to the ordinance has been voiced by real estate and business interests, which say the sewer rent is simply a disguised real estate tax.

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# onstruction Communiques

## Engineering News from the Battlefronts

**uth Pacific area**—Award of the nguished Service Medal to Col. s E. Teale, Corps of Engineers, rne, Tex., for exceptionally meri- us service to the government in a ion of great responsibility, was nced recently by the War Depart-

s chief engineer, United States Services of Supply in the South- Pacific area from May 25, 1942, ov. 30, 1943, Colonel Teale super- the extensive program of engineer ruction urgently needed for opera- in that theater," the citation said.

**rawa**—The day following the cap- of Tarawa four U. S. manufactured uilders were at work on the air- The Japs had already constructed eld and purposely it had not been badly damaged by the intensive ing of the American fleet. For this n, the main job of the trailbuilders o fill in the shell holes.

erican fighter planes began land- nd taking off from the field as soon e trailbuilders had given it a pre- ary going over.

**utians**—On March 21 the Navy nced that an award of commenda- ad been given to a Seabee bat- under Commander John P. Rou- or the rescue of the 50-man crew Navy net layer which got into lties off one of the Aleutian s some time ago. The battalion ,000 ft. of steel cable to the ship, brought the crew off safely by s of a breeches buoy.

**oodlark Island**—Working 16 hours Ensign R. J. Betz of Allison Park, uperintending 147 men of the es, completed an air strip 4,000 g, 400 ft. wide on Woodlark Island South Pacific in 13 days. The orked from 6 a.m. to 2 a.m. each t took five days to clear away the nd haul in coral on small amphib- raft, then eight days more to com- he job.

**en Island**—Several Seabee bat- , using 12,000 tons of equipment, through a record construction the Green Island group, putting hter planes over Kavieng within weeks after the occupation, a ment news release said March he Seabees hacked a coral air- from the jungle, working night y with equipment worth $2,500,000. The Seabees used brilliant lighting at night, defying Japanese bombers to interfere with their schedule. The Japanese soon felt the results when fighter planes were able to operate from the runways against the Japs' remaining Bismarck bases.

**Burma**—American gliders and transport planes have landed British and Indian troops 150 miles behind Japanese lines in north-central Burma in a successful air-borne operation. The troops were landed on bases hastily constructed by American Army engineers. American gliders carrying an advance contingent of air command personnel, including engineers with their equipment, jeeps and even mules, landed at two separate points behind Japanese lines.

Immediately upon their landing, American combat engineers and glider pilots went to work building landing strips. The following night huge twin-engined C-47 Skytrain transport planes landed troops on the rapidly constructed runways.

**Oceania**—Though the Japanese and the Americans use coral to build airfields in the South Pacific, according to the Navy those built by us have far greater bearing capacity because we use live coral, while the Japs use dead coral organisms. Live coral has been found to have considerable cohesive qualities which continue as long as the organisms are kept alive by frequent applications of salt water to the fields. The Navy's Seabees can obtain live coral because they are equipped with power shovels, carryalls and drag lines to dig the material from the sea or from below the atolls' groundwater table. Since the Japanese depend largely on hand labor, they are limited to the use of skeletal coral remains. Even when combined with cement, the dead coral doesn't stand up under heavy planes as our own live coral fields do.

**Canada and Alaska**—Final strands in the 2600-mi. telephone system installed in Canada and Alaska by the U. S. Army have been joined on the 595-mi. circuit from Norman Wells to Whitehorse, it is announced by Brig. Gen. Ludson D. Worsham, commanding general of the Northwest Service Command.

This line, from the oil wells of the Canol projects to the refinery at Whitehorse, is the last link in the northwest telephone system. It parallels the pipeline for the most part and is connected with a telephone system that extends from Edmonton to Fairbanks, completed by the Army last fall.

It is now possible for officials in Washington to talk directly with men in the field throughout all the Northwest Service Command installations.

Men who built the telephone line experienced many hardships. Temperatures ranged from 80 deg. above zero to 60 below.

U. S. Navy photo

**"Main Street" at a Pacific invasion base**

*Mucky after a heavy rain, this road through a jungle at one of our newly won South Pacific bases bears a heavy load of traffic as trucks, jeeps, bulldozers and tractors churn up its surface enroute to and from the landing dock during preparations for another attack.*

# Government strikes out at brokers of engineering services on war jobs

***Five government agencies undertake to end activities of "engineering service companies" that do no real engineering but act only as brokers.***

A concerted effort to eliminate some types of what are characterized as "engineering service companies" from war work has been inaugurated by the National War Labor Board, the War Manpower Commission, the War and Navy departments and the Maritime Commission. Some of these companies, according to the National War Labor Board, "render little, if any, engineering service, but really serve as labor brokers supplying skilled workers for excessive fees, a practice which increases the cost of war production, tends to cause labor unrest and reacts against the wage stabilization and manpower programs." The announcement states also that the five federal agencies recognize the value and need for legitimate engineering service to war contractors and that their action is not directed against companies giving legitimate engineering advice and technical assistance.

The War Labor Board's announcement is not specific as to where the brokers of engineering services have been active, but it indicates that their operations have been largely in the industrial field. However, reports from other sources state that some contracts for survey work are being scrutinized to determine whether the prime contractors render any actual engineering services or just supply men for surveys.

As a result of the War Labor Board efforts to stamp out this practice, twelve regional boards are "defining" major job classifications used by engineering service companies and establishing approvable wage rates, notifying procurement agencies and employers of the rates, establishing appropriate regulations governing additional payments for out-of-town work by employees of service companies, and continuing investigations of alleged violations of the stabilization act of Oct. 2, 1942."

The War Manpower Commission expects to require the discharge by engineering service companies and the termination of services by the producer contractor of each individual who WMC determines was hired by the engineering service company in violation of regulations.

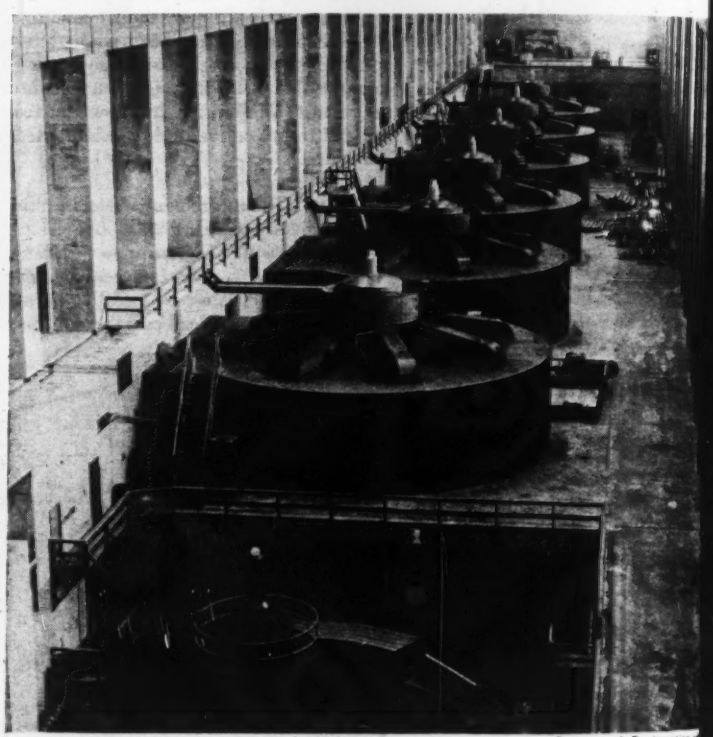
## Full damages awarded for wrecked bridge

The Supreme Court of Kansas in an opinion filed April 8, 19944, has definitely established a measure of damage for the destruction of a public bridge. This is the first English speaking court of record which has definitely established a workable formula for the determination of this question. The case will be reported in the Pacific Advance sheets under its title, State Highway Commission of Kansas vs Clarence G. Stadler, et al.

The bridge in question was a pony truss located on highway 8, in Smith County, Kan., and had been in use 49 years. The defendants contended and the trial court held that the highway commission was entitled to recover only the amount which would have been required for the replacement of a like structure at the same location, less depreciation computed at a rate between 50% and 75%. The bridge was replaced by a more expensive structure.

In reversing the lower court's decision, the State Supreme Court said that the "measure of damages recoverable under the statute is the actual replacement cost of the illegally destroyed structure at the moment of its destruction." It added that this is the "fairest and most equitable rule that could be adopted under all existing circumstances and conditions, keeping in mind the rights of both the public and the individual."

The lower court was instructed to enter judgment for $1700.00, the full estimated cost of replacement.



Bureau of Reclamation

## Coulee Dam's March output—621,000,000 kw.-hr.

*The Bureau of Reclamation power plant at Grand Coulee Dam, Wash., in March set a new world's record for electrical production by a single plant in a month's time with a gross output of 621,000,000 kw.-hrs.*

*The power house became the world's greatest power producer in less than three years after the first generator was installed. The rated capacity of the present installation is more than 800,000 kw., less than half ultimate development.*

*The small machine in the foreground one of the two 75,000 kw. units transfe from the Bureau's Shasta Dam to Coulee Dam in 1943 to provide addi power for war use. The six other units rated at 108,000 kw., are said to be largest hydro-electric generators in the*

# OUR ENGINEER GENERALS

## *Chief Engineer, Southwest Pacific Area*

## MAJ. GEN. HUGH J. CASEY

hen the Japanese swarmed through hilippines and cut our supply lines, ican troops soon found many neces- unprocurable. Hand grenades, for ple, so essential to offense and se, were quickly used up, and to this deficiency a U. S. Army engi- made hand grenades of split bam- n which he wrapped up dynamite. bolts, screws, horse-shoes and ver other scrap metal he could Crude but effective, they were "Casey's Cookies" in honor of ventor. When the Nips got too far to be reached by hand-thrown des, this same engineer had auto- springs anchored in concrete, ed them as catapults to throw the des,—"Casey's Cookie Flippers." the Japs found that caves along oast were effective shelter from fire, "Casey's Cruisers," made by ing boiler plate for armor around ry boats, went in close and y liquidated the cliff-dwellers. so on through a succession of lt problems, this officer, now Maj. Hugh J. Casey, chief engineer, Southwest Pacific Area, struggled t heavy odds, devising, and im- ing almost endlessly until finally e of battle turned.

ing this time the leadership of en- ing forces succeeded as it did because of two characteristics. were mentioned in the citation ac- nying the Distinguished Service (or perhaps it was the Distin- d Service Cross—Gen. Casey has ed both). He was commended for enius for organization and his tre- us energy." These qualities, which ed engineers of his command to ce even beyond their capacity, d for him the nickname "steam in britches."

eral Casey's professional record with his graduation from the Military Academy in 1918; he orn in Brooklyn, June 12, 1898. In he was awarded a Freeman Fellowship in hydraulic research, as a result of which he studied at the Berlin Institute of Technology, and in 1935 received the degree of Doctor of Engineering. From 1935 to 1937 he was chief engineer of the Passamaquoddy tidal power project in Maine; from 1937

**Maj. Gen. Hugh J. Casey**

to 1940, engineering advisor in Manila to the Philippine Commonwealth Government; and from 1940 to 1941, chief of design in the engineering section, Office of the Quartermaster General, Washington, D. C., as assistant to General Somervell on a national defense construction program aggregating $2,000,000,000. Then he went back to the Philippines, this time as assistant to General MacArthur, serving as chief engineer, U. S. Army forces in the Philippines.

After the loss of the Philippines and during the rapid advance of the Japanese down the Malay peninsula and through New Guinea almost to Australia, the demands upon an executive engineer in the army were strenuous indeed. By the time we had forces equipped and actually ready for action, the only toehold we held in the entire 1200 mi. length of New Guinea was a little spot on the south side, at Port Moresby, where there was one wharf suitable for a Liberty ship, no oil storage, no airfields, no communications and almost no roads. Indeed there were not more than 20 mi. of improved roads on the entire island.

The total number of army engineer troops available in the first 18 months of this campaign was fewer than 5,000, and their equipment, such as they had, was in the light, small units which later experience showed to be far inferior to the larger sizes now used. The scene of action was in a jungle-covered island where there were no facilities to aid development. On the contrary, newcomers were menaced with health risks numerous and severe, the more dangerous because they were little known. Moreover, at a time when ocean transport was doled out sparingly indeed, success of these operations depended upon delivery of enormous tonnages to points distant several weeks, by freighter, from America's West Coast.

The first necessity was to throw out the enemy and then to build, with all speed, supply bases and facilities for supporting a great military movement. To do this under conditions obtaining in the Southwest Pacific area was to solve one of the most difficult engineering problems of the war. General Casey was just the man for such a task; it could not have been accomplished by anyone with less than his tremendous energy, resourcefulness and ability to plan and gather a construction organization.

Engineers judge by results. The true measure of General Casey's success is a review of what he has accomplished.

(*Continued on next page*)

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## Maj. Gen. H. J. Casey

(*Continued from preceding page*)

But, such a review is not easy to present adequately because words fall short of completing the picture. It is necessary actually to see the difficult situations and the changes accomplished to appraise fairly what has been done.

In contrast with the initial lack on New Guinea, there is now abundance. Instead of one dock there are now dozens and scores. At one base, wrested from the Nips only a few months ago, and recently visited by the writer, 26 docks have been completed or are under construction in connection with practically every other facility needed for military uses. And this is but one of many strategically located bases that make possible the great movements of troops, supplies and machinery of modern warfare. Moreover, the bases are relatively free from malaria and dengue fever as a result of control measures put into effect under General Casey's direction.

Where before were few roads and no airfields, the number of runways, taxi strips and hardstands now in use are sufficient to handle thousands of planes daily, service them and store them in adequately spaced dispersal areas. From Port Moresby to Tokio the airline distance is 3,114 mi. It could be significant that the hard-surfaced roads, airstrips and taxi-ways built under General Casey's direction have a total area equal to that of an 18-ft. roadway also 3,114 mi. long.

These construction achievements amount to an epochal transformation of the Southwest Pacific Area. They are outstanding events in the history of engineering. What manner of man is it that has planned and directed all these construction activities?

General Casey is a soft-spoken man with a dynamic personality. Like still water that runs deep, his quiet, kindly manner makes friends instantly, and a keen mentality follows the thread of purpose in all his contacts. He would be the first to give credit to his organization for what has been accomplished. And his staff gives evidence of his ability to select capable men. He keeps about him representative engineers from high stations in the engineering world of peace times. This staff functions smoothly and efficiently, lubricated by a loyal devotion to "the chief."

It has even been said that while General Casey is a brilliant engineer, he is primarily an organizer, an administrator and a leader. Certainly he expects (and gets) results. For him a mediocre job won't do. It must be as near perfection as possible—all details completed and no loopholes left. He has strong convictions on how the carry on the engineering phases of war. At a time when military engineers quite generally were using light equipment because of its portability, he preached the use of heavier equipment, arguing that it takes only one man to run a D8 which will do the work of several D4s. Because of the premium on trained personnel he says "Use larger equipment and fewer men."

He can work for 24 hr. without a stop and then appear to be just as fresh as at the beginning. Or he can lie down in a plane on top of ammunition boxes, fall asleep instantly and not awaken until the plane lands. He is a man wrapped up in his job, an earnest believer in the vital part that engineers are playing in the war. Along with that goes his belief that they should work longer and harder than anybody else. *N.A.B.*

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## Steel industry plans reinforcing steel study

The American Iron and Steel Institute, has set up a Committee on Reinforced Concrete Research to begin a basic study of the uses of steel bars for concrete reinforcement. Included in its membership are representatives of 21 bar producers of both new billet and rail steel, and

R. R. Zipprodt has been employed as research and consulting engineer, to plan and supervise the investigations.

The initial program of the committee's work covers a minimum of three years, with a likelihood that its activities will cover a much longer period. After studies by the research engineer have revealed the extent to which serious gaps exist in the technical data on the basis of which design regulations and specifications are customarily written, programs of research will be initiated for the purpose of developing new test data or of supplementing existing data.

### Projects for research

The committee has already authorized several research projects. One already under way covers problems related to the proper design of square and rectangular footings. No research work in connection with the proper and economical design of footings has been conducted since the original work done by Dr. A. N. Talbot and reported by him in 1913, so that major changes in design requirements may result.

Another project will involve the investigation of permissible unit stresses to be used in the design of reinforced concrete slabs and beams to determine the extent to which the ratio of slab thickness to span affects the unit stresses in the slab and consequently the deflection; also the extent to which the span of slabs or beams should be limited by the size or type of reinforcement used. Still another phase of the project will be an investigation of the effect of plastic flow, particularly in structural members subject to their own dead weight as well as uniformly distributed live loads.

A third project will consist in the classification of all types of deformed bars which may be developed as a result of the concrete reinforcing steel industry's plea to develop a standard or universal type of deformed bar. Such classification tests are to be conducted in parallel at three well-recognized research laboratories after a standard form of test for bond by the American Concrete Institute committee has been approved.

Some of the problems selected for investigation may be handled through the establishment of research fellowships at various well-recognized research laboratories. Other projects may be sponsored outright by the American Iron and Steel Institute committee in cooperative investigations with a particular laboratory. If the research results in technical data which appear to warrant changes in existing building or design regulations, it is proposed to present such data to the recognized code or specification-writing bodies.

Mr. Zipprodt, under whose direction these researches will be carried out, is a graduate of the University of Illinois in 1915 and has had long experience in concrete research and design, including a number of years in private practice and in the field of research with the Emergency Fleet Corp. and the National Bureau of Standards. Subsequently, he was regional structural engineer with the Portland Cement Association and later associate professor of civil engineering at Columbia University. For 3 years he was in the military planning division of the Office of the Quartermaster General in Washington, where he had charge of standardization and simplification, particularly with respect to the conservation of strategic and critical materials. He is secretary of American Concrete Institute committee on standard building regulations for reinforced concrete and a member of the Institute's committee on research and on precast floor systems for houses. He is also on the American Standards Association's committees and foundations committee.

## BRIEF NEWS

he shipbuilding industry at Houston, , heads the list of war industries in Houston area that will need more kers within the next six months. Of 8,619 additional workers that will needed by all the war industries in area, 3,020 will be required for building, which already employs ut 46,000 workers.

The Federal Power Commission re- ly denied application of the First a Hydro-Electric Cooperative of catine and Davenport, Iowa, for re- ideration of the commission's order nissing application for a federal li- e for a 8,300-foot dam across the ar River about 21 miles upstream its confluence with the Iowa River, servoir, and a powerhouse and gen- ing units with a capacity of 70,000 Application for rehearing was de- d, the order says, because no argu- ts not already considered by the mission were advanced.

lexander C. MacKenzie, of Bedford, S., building inspector of that district past ten years, and previously for years a masonry contractor, became ecently. He is believed to be the old- est building inspector in the world. As a contractor, he participated in the construction of some of the leading buildings in Nova Scotia, including colleges, schools and post offices.

The New Mexico State Highway Commission has discontinued its highway equipment rental program because of difficulty in getting parts and tires, and because of the need of the equipment for maintaining roads. Charles Johnstone, highway maintenance engineer, said the program had brought in about $500,000 since June, 1942.

Dallas, Tex., has been given federal grant of $463,196 to be used on constructing a $1,388,000 sanitary sewer and water lines project for new defense housing. The city based its claim for federal aid on the fact that much of the housing is temporary, requiring sewerage and water service not called for in normal times.

President Roosevelt has authorized the Bureau of Reclamation to complete the Deerfield Unit of the Rapid Valley irrigation project on the edge of the Black Hills in western South Dakota, Secretary of the Interior Harold L. Ickes has announced.

On the basis of a report by Commissioner of Reclamation Harry W. Bashore, the Secretary explained that the work approved will involve completing the Deerfield Dam, an earth and rock-fill structure, and a reservoir of 15,000 acre-feet capacity to supplement the municipal water supply for Rapid City, S. D., and the irrigation supply for 12,000 acres of land. This area, capable of producing important quantities of war foods, is now not intensively farmed because of the lack of an adequate supply of water in the late summer. Rapid City is in urgent need of additional municipal water to meet increased demands imposed on it by war activities.

The current budget for Mexico, as presented by President Avila Camacho, calls for $20,000,000 for road building. Other items call for $16,000,000 for irrigation projects, $4,000,000 for railroads, and $5,000,000 for marine work.

The largest flood-control project of its kind in the United States, at Johnstown, Pa., project started in 1938, is completed. Engineers in widening and deepening the river channels of the Conemaugh River, Little Conemaugh and Stony Creek, dredged out nearly 3,000,000 cu.yd. of soil and mud. Sloping concrete walls which replace the river bank were made of 156,631 cu.yd. of concrete. The bursting of a dam at Johnstown in 1889 caused great loss of life and enormous property damage.

# Stream flow and ground water improved in March

ring March the stream-flow drought he southeastern and south central es was definitely broken, and, ex- ing southern Florida, stream flow broad areas approached that dur- March, 1929, one of the wettest of rd.

hroughout the West, stream flow inued subnormal except in Nevada western Arizona. Runoff conditions particularly adverse in the Pacific thwest States and in southeastern ona. Stream flow deficiencies are noted in southeastern Ontario, t of Quebec except the central por- New Brunswick, New England, northern New York.

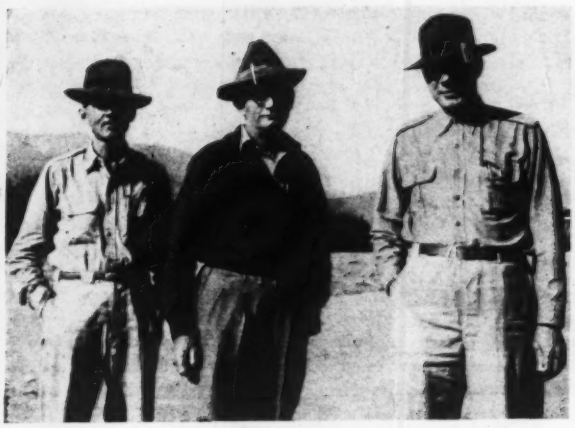
round-water storage, as indicated key wells not affected by heavy ping, increased in most parts of the try. The increase was especially worthy in States along the Atlantic t where storage for many months been low. The water level in the well near Old Bridge, N. J., a low well that reflects natural condi- , rose to the highest March stage he last 20 years; significant rises rred in most key wells from New York to Alabama and the outlook in these States for shallow-well supplies and fair-weather flow of streams is greatly improved. Ground water in central and southern Florida continues low but conditions improved during March in the northern part of the State. In southeastern Arizona and southwestern New Mexico ground-water storage is still low.

Normal
EXPLANATION
Deficient stream flow
Excessive stream flow
Greater than any percentage previously recorded during March
Less than any percentage previously recorded during March
Month-end ground-water level in observation well.
High
Normal
Low
Wells in formations heavily pumped shown by solid circles.
All numbers are percent of normal (median or mid-value) stream flow for month of March.
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
IN COLLABORATION WITH
CANADA
DEPARTMENT OF MINES AND RESOURCES
DOMINION WATER AND POWER BUREAU
MARCH 1944

# WORKING on the *Alcan Highway*

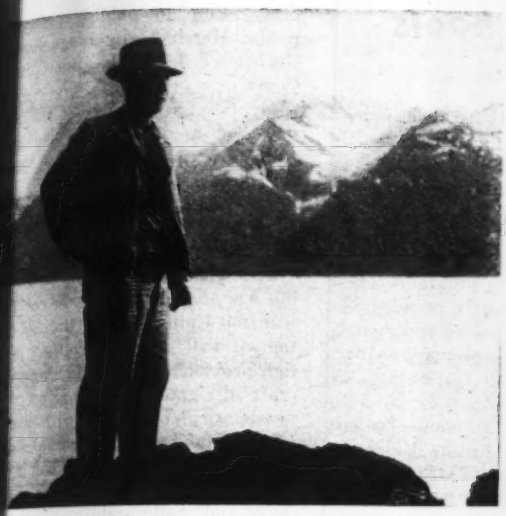
*CAPT. EMIL SMITH, skipper of the Canol, didn't build any part of the but he is mighty busy transporting men materials between Skagway and Haines.*

*Way up on Alaskan section the camera found RAY VAN BUSKIRK and ROSCOE DICK (on the ends), key men with Ira Van Buskirk from Hawarden, Ia., flanking M. G. HEWETT, area engineer for PRA.*



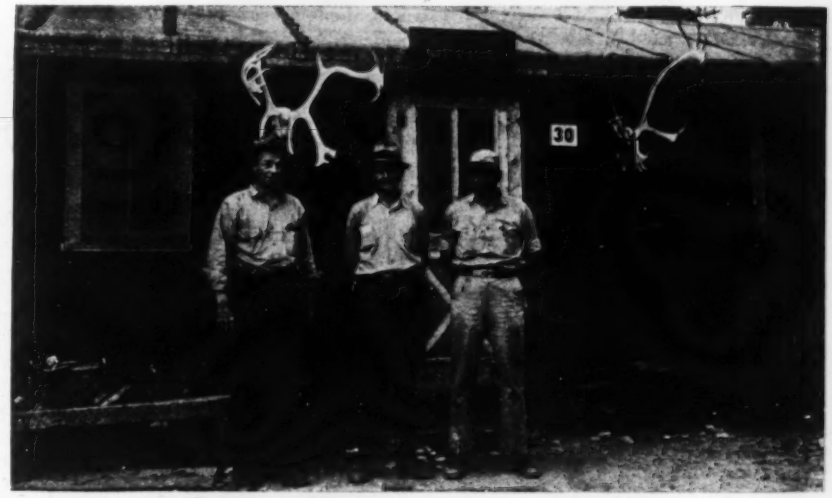
*Three Iowans snapped on the Johnson River Bridge in Alaska: CLYDE ELLIOTT, of L. Peterson Co.; C. C. COYKENDALL, Lytle & Green Co.; and L. PETERSON himself.*

*WM. M. MATTHEWS, superintendent for Utah Construction Co. one of the busiest men on the highway, waits for the dinner in front of the White River camp mess hall.*



*...t River scenery with its snow capped mountain peaks fascinates ... DOYLE, civilian engineer for the U. S. Engineers on the ...s Cutoff.*

*For a while the only way to get over the Utah Const. Co. section in the Yukon was by horseback, and here is FRANK RAGLAND, the contractor's engineer, doing just that.*




*...nt of the DuVall & McKinney ...p at Alaska's Big Gerstle River ...d P. K. DUVALL, president of ... firm, Logan, Ia; K. W. GRAVES, ... Graves Bros. Const. Co., an- ...er Iowan; and R. L. NABERS, of ...le & Green Co.*

*...H GOVAN from Port Angeles, Wash., pauses with COL. ... (RUSTY) LYONS, U. S. Engineers, on an inspection of ...n's job in the Yukon.*

*S. L. RUGGLES and C. C. WITHROW, civilian engineers for the U. S. Engineers on the Haines Cutoff, seem perplexed over the map of the road. They ought not to be, for they located it.*

# News of the engineering schools

B. J. Lambert, professor and head of the civil engineering department at the University of Iowa will retire in June from active leadership of the department, which he has headed for 42 years.

Mr. Lambert took his academic work at Iowa State Teachers College adding to it a B. S. in civil engineering obtained at Iowa in 1901. After serving on railroad work he became head of the civil engineering department at Iowa in 1902, a position he has held continuously since. While retaining the executive post of department head, Lambert has taken short leaves of absence to do contract work in which he built dams across the Iowa River and constructed or supervised the building of many of the university facilities. He served as a major of engineers with the A.E.F. and for a time was acting dean of the College of Engineering at Iowa.

Engineering alumni of Iowa and friends of Mr. Lambert have established a scholarship fund named in his honor, which was formally announced at a party honoring his seventieth birthday on April 25. The fund will be administered by the faculty of the engineering college to further Mr. Lambert's ideals in education.

The resignation of Dr. George P. Rea as president of the Drexel Institute of Technology, Philadelphia, effective next August, was announced April 17 by A. J. Drexel Paul, president of the board of trustees.

Dr. Rea was elected president of Drexel in July, 1942, having resigned as president of the New York Curb Exchange to accept the position. He will now return to private business but will continue to serve as a member of the board.

In speaking of postwar engineering education recently, William E. Wickenden, president of the Case School of Applied Science, Cleveland, Ohio, said: "The tide of returning students is likely to be moderate, since so many have been enabled to continue under the Army and Navy programs, and because of the slower demobilization in the technical arms of the services. The war has revealed few deficiencies in prewar engineering education. Change in educational habits in general has been toward the familiar engineering models, with their heavy time schedules, detailed work assignments, content emphasis, mastery standards, and intimate supervision. In fact, these have been the models on which the Army and Navy have built their college programs. These trends do not necessarily establish the superiority of these habits and models, but they do make revolutionary changes less probable."

The services of a photo-elasticity laboratory, installed by the University of Kansas at a cost of $25,000, are now available to engineering technicians of the state. The laboratory has been developed for plastic research, which the university and the Kansas Industrial Commission have sponsored. The laboratory's chief use is in the field of structural engineering in the determination of stress analysis.

Lieut. Col. George H. Harding of the Corps of Engineers, stationed in Egypt for 20 months, and in civilian life an assistant professor of civil engineering, University of Louisville, Ky., was recently honored for technical assistance to a French engineering group in Syria and Lebanon. He was given the badge of the French Service Geographique.

Colorado University is adding a department of mechanical and aeronautical engineering, to be headed July 1 by Prof. K. D. Wood, a leading authority on aeronautical engineering and plane design. Three thousand extra feet of floor space has been added for the new department, and when building restrictions are lifted it is planned to enlarge the department and give it a new building.

Professor Wood was graduated from Cornell University in 1922, and in 1926 received his M.S. degree there. From 1918 to 1920 he was assistant mechanical engineer for the U. S. Bureau of Standards. From 1920 to 1936 he was associate professor of mechanical engineering at Cornell. During those years he also did consultation work with the Bell Telephone Laboratory, Morse Chain Corp., Atmospheric Nitrogen Corp. and the Consolidated Aircraft Corp. From 1936 to 1943 he was professor and head of aeronautical engineering at Purdue University

The selection of St. Louis University as the school to receive a bequest of $1,350,000 under the will of Henry E. Sever, Chicago publisher, was announced public March 27 by Judge Joseph Graber of the Cook County Superior Court.

Mr. Sever's will directed that the bequest be used for the founding of a technological institute to bear his name. St. Louis University will establish the Sever Institute of Geophysical Technology.

The Princeton School of Engineering has announced that, in cooperation with the United States Office of Education, it will give two courses on aviation problems this spring. One for aircraft designers and engineers at nearby airplane plants, will have to do with the fundamental principles of mechanics, basic aerodynamic considerations, engine and propeller performance, and static stability. The second will be devoted to the soil mechanics of airports.

An appraisal of the curriculum of the School of Engineering at Yale University, with the purpose of insuring that its graduates will meet the standards of educational training demanded by contemporary industrial management, has been undertaken by the engineering faculty.

The engineering cabinet of the State college has recommended that the college's engineering division change from the quarter system to three 16-week semesters. If approved, the change would go into effect July 1, and the fall term for engineers would open Nov. 1. The proposed change would permit integration of the college engineering courses with the Navy training program and relieve the faculty strain in conducting parallel courses. The cabinet is comprised of Dean [illegible] Agg, department heads, and directors of the engineering extension service and experiment station.

The special army training courses operated at Canadian universities will be discontinued after the present academic year. About 1,200 men have been given this special one year training, equivalent to the first year of a regular engineering course, while serving in the Canadian army. The course was to give basic engineering training to potential officers. The army call-up age has been reduced from 20 to 18½ years. There is a surplus of officers in the Canadian army so that further recruits are not needed. Engineering training in Canada will continue according to peace-time standards, but all students are regarded as "wards of the government" and must maintain certain standards to continue their studies.

## OBITUARY

**...ca S. Haskell,** 71, a retired engi... Standard Oil Co., division of the ... pipe line, died April 10 in Can... hio. He went to Canton in 1907 ... engineer for the company and ...hat position until six years ago ...e retired.

**...n Lloyd Schutzendorf,** 48, execu... Ridge Engineering Co. of Wav... N. Y., died April 9.

**...r Jens Frandsen,** 65, sewer con... of Kenosho, Wis., died April 6.

**...P. C. Halbfass,** Muscatine county ...er almost continuously since 1905, ...t Muscatine, Iowa, recently. He ... graduate of the state University ...a and received a civil engineer... ...gree there in 1914. He was for... ...ssistant city engineer at Grinnell, ...nd in 1929 was a subdivision ...enance engineer of the Iowa High... ...ommission. He was a former dis... ...ecretary of the Iowa Engineering ...y.

**...ius P. Yale,** 78, retired civil en... and president of the former Yale ...gan Co., railway and waterway ...eting engineering firm of St. Louis ...hicago, died April 16. As chief ...er of various railroads, he was a ...r in railroad construction in the ...before the organization of Yale ...eagan shortly after the turn of the ...y. Most of that firm's work was ...e Mississippi, but it built hun... ...of miles of railroad before going ...aterway construction.

**...eph Richard Mount,** 72, retired ...g contractor, died at Birming... ...Ala., April 10. Before his retire... ...he built many of the homes in the ...wood district and other sections ...mingham.

**...radon S. Smith,** 73, consulting en..., died April 9, at Forty Fort, Pa.

**...ed H. Sluss,** 66, member of the ...ering staff of the University of ...s since 1908, died April 17. He ...ctive in the Society for the Pro... ...n of Engineering Education.

**...rles E. Randels,** 56, died April ... Tucson, Ariz. He had been a ...engineer for the U. S. National ... Service for the past eighteen ... He served as chief civil engineer ...ssen National Park, Calif., and ...ght years was at Glacier National Park, Mont., after which he went to Teton National Park and to Rocky Mountain National Park, Colo.

**Ralph G. Packard, Jr.,** 68, retired river and harbor engineer and a former partner in R. G. Packard & Co., New York, died at Morristown, N. J., April 23. His firm did much of the rock removal work in the Hell Gate section of the East River, New York.

**Fred M. Emerson,** 68, for many years representative of the American Bridge Co. at Milwaukee, Wis., and later a consulting structural engineer, died April 15.

**James E. Gould,** 69, of Halifax, N. S., died April 18. He was president of the Acadia Construction Co. and Standard Construction Co., both of Halifax. He was also president of the Coleman Machinery Co., dealers and distributors of contractors' equipment.

**Amos S. Benson,** 66, a pioneer in the construction of the Columbia river highway and former Oregon timberman, died in Los Angeles recently.

**August Fred Frendberg,** 63, retired division engineer of the Louisville & Nashville R. R., died at his home in Lexington, Ky., April 16. He was connected with the Eastern Kentucky division of the road, and had his offices at Ravenna, Ky. He retired in 1937.

# CONTRACTS AND CAPITAL

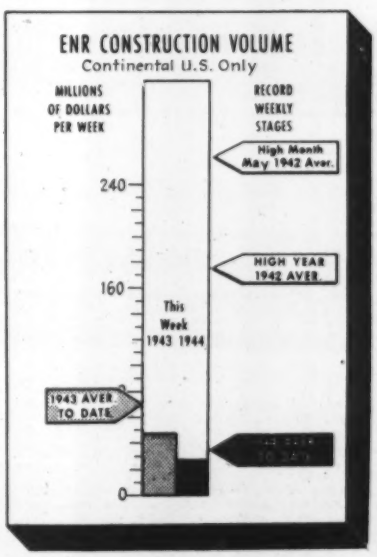
CIVIL ENGINEERING construction volume in continental U. S. totals $26,737,000 for the week. This volume, not including the construction by military engineers abroad, American contracts outside the country, and shipbuilding, is 48 percent below the total for the preceding week, 43 percent under that reported for the corresponding 1943 week, and 24 percent lower than the $35,010,000 average for the seventeen weeks of 1944.

Private construction is 3 percent above last week, and 77 percent above a year ago. Public work, however, is 57 and 56 percent lower, respectively, than in the previous week and the 1943 week, due to the lower federal total.

The current week's construction brings 1944 volume to $595,162,000 for the seventeen weeks, a decrease of 51 percent from the $1,218,109,000 reported a year ago. Private construction, $125,989,000, is 1 percent lower, and public work, $469,173,000, is down 57 percent as a result of the 4 percent decline in state and municipal and the 60 percent drop in federal.

In the classified construction groups, gains over last week are in sewerage, industrial buildings, and streets and roads. Increases over the 1943 week are in sewerage, industrial and commercial buildings, and streets and roads.

New capital for construction purposes for the week totals $997,000 and is made up of $397,000 in state and municipal bond sales, and $600,000 in corporate security issues. New construction financing for the year to date, $365,635,000, is 24 percent below the $479,279,000 reported for the 1943 period.




### CONTRACTS

**Continental U. S. Only**
**(Thousand of Dollars)**

| | Week Ending Apr. 29 1943 | Apr. 20 1944 | Apr. 27 1944 |
|---|---|---|---|
| Federal | $37,189 | $37,032 | $10,076 |
| State & Municipal | 5,306 | 6,454 | 8,492 |
| Total public | $42,495 | $43,486 | $18,568 |
| Total private | 4,605 | 7,939 | 8,169 |
| TOTAL | $47,100 | $51,425 | $26,737 |
| Cumulative 1944 (17 weeks) | | | $595,162 |
| 1943 (17 weeks) | | | $1,218,109 |

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

### NEW PRODUCTIVE CAPITAL

| | Cumulative 1943 17 Weeks | 1944 17 Weeks |
|---|---|---|
| NON-FEDERAL | $78,929 | $159,803 |
| Corp. Securities | 2,821 | 69,919 |
| State & Mun. | 64,475 | 36,104 |
| RFC Loans | 8,500 | 53,780 |
| FPHA Loans | 3,133 | ..... |
| FEDERAL | $400,350 | $205,832 |
| TOTAL CAPITAL | $479,279 | $365,635 |

### ENR INDEX NUMBERS

| Index base=100 | | 1913 | 1926 |
|---|---|---|---|
| Construction Cost | Apr. '44 | 297.70 | 143.10 |
| Building Cost | Apr. '44 | 234.50 | 126.76 |
| Volume | Mar. '44 | 103. | 45. |

# CONSTRUCTION REPORTS

*Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York, 18, N. Y.*

*ELSIE EAVES, Manager* *SCOTT McLEOD, Statistics* *J. A. MAHONEY, Reports*

(Daily service also available—Write for details)

## WATER SUPPLY

### PROPOSED WORK

**†California**—U. S. Eng., 74 New Montgomery St., San Francisco, high pressure water line in Northern California, Job No. 1169-2.

**†Calif., Alameda**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., relocating watermains and exten., watermains and fire hydrants, 2,000 ft., $21,000; 5,000 ft. watermains with hydrants, $35,000, Naval Air Station.

**†Calif., Barstow**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., exten. water supply and fire protection, Naval Supply Depot, $20,000.

**†Calif., Camp Elliott**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply and sewage treatment to existing sys. $250,000.

★**†Calif., Camp Joseph H. Pendleton (br. Oceanside)**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply and sewage treatment to existing sys. $500,000.

**†Calif., Hunters Point**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., exten. water distr. sys., Naval Drydocks, $100,000.

**†Calif., Livermore**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., water-treatment facilities, Naval Air Station, $40,000.

★**†Calif., Mare Island** — Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., loop sys. and exten. fresh-water lines, $115,000; connection between Mare Island and East Bay municipal utility district, $660,000, Navy Yard.

**†Calif., San Diego**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply lines, 16 in. supply line across San Diego Bay and 16 in. line to interconnect to Naval Air Station sys., Naval Air Station, $200,000.

**D. C., Wash.**—District Comrs., District Bldg., rejected bids Mar. 9, deep well, pumphouse, water sys., near Laurel, Md. CD 3/14—ENR 3/16, under LB.

**†Fla., Banana River** — Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. well and water softening equip. for boiler feed water, Naval Air Station, $10,000.

**†Fla., Lake City**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. deep water well, Naval Air Station. $10,000.

**†Fla., Tampa** — City, bids soon, imprv., exten. WW sys. $106,196. **FWA.**

**†Idaho, Farragut**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., imprv. water supply, constructing fireproof pumphouses, fireproofing booster pump house, installing addnl. mains, Naval Training Station. $85,000.

**†Ill., Great Lakes**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water filtration capacity, 5,000,000 gpd., Naval Training Station. $300,000.

**†Kan., Liberal**—City, water sys. imprvs., incl. mains, wells, pumps, pump houses, Kan. 14-257-N. $49,000. **FWA.** Wilson & Co., Salina, engrs. CD 4/10—ENR 4/13.

**†La., New Orleans**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., 200,000 gal. reservoir, Naval Station. $30,000.

**†Me., Auburn** and **Lewiston** — Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., 250,000 gal. reservoir and two 500 gpm fire pumps, Naval Auxiliary Air Station. $40,000.

**†Me., Brunswick**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., 200,000 gal. reservoir Naval Air Station. $30,000.

**†Me., Portland**—City, preparing plans, c.i. watermains, installing fire hydrants, various streets. $30,000. **FWA.** J. A. Gardner, 57 Exchange St., district engr.

**†Me., Rockland**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., 50,000 gal. water tank and 1¾ mi. 6 in. line, to Camden-Rockland Water Co., Naval Auxiliary Air Facility. $60,000.

**†Md., Annapolis**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply, 1 deep water well with pump. equip. and changes in fire sys. at North Severn Activities, Naval Academy. $60,000.

**†Md., Bainbridge (sta. Port Deposit)**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., imprv. water supply sys. sump pit below extreme low water, addnl. pumps. and exten. 8 and 6 in. mains, fittings, Naval Training Station. $38,000.

**†Md., Indian Head**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., fresh water supply, Naval Powder Factory. $350,000.

**†Mass., Beverly**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. watermains to complete loop sys., Naval Air Facility. $20,000.

**Mass., Braintree**—Town, Water Dpt., 795 Washington St., preparing plans 11,650 ft. 12 in. c.i. watermain, State Hy., West St. and Route 128. $50,000. Weston & Sampson, 14 Beacon St., Boston, engrs. CD 3/31—ENR 4/6.

**Mass., Sharon**—Town, Supt. Water Dpt., preliminary plans water supply sys., incl. addnl. distr. mains, c.i. pipe. $17,000. Weston & Sampson, 14 Beacon St., Boston, engrs.

Location of ENR Correspondents

### *Symbols and Abbreviations Include:*

† Federal Government
★ Project of $500,000 or over.
ENR Engineering News-Record
CD Engineering News-Record Construction Daily
A-E-M Architect-Engineer-Management type of contract

### *Projects—By Size*

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

### *Classes of Construction*

(Named in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Unclassified
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings

### *Stages Reported*

PROPOSED: (except Streets & Roads); BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR);
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

**Note:** To comply with censorship requirements, addresses on some reports are being generalized. Data which would reveal the purpose of the improvements and the size are withheld. The name of contractor and general area are reported.

**Mich., Dundee**—Village, retained Paul Hirn, engrs., 532 Michigan Bldg., Detroit, to prepare plans water treatment plant, distr. sys. addn. $50,000.

**†Mich., Grosse Ile**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply, fire protection, Naval Air Station. $40,000.

**†Minn., Minneapolis**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply, fire protection (Wold-Chamberlain Field), Naval Air Station. $30,000.

★**Mo., St. Louis**—City, Water Dpt., E. E. Eesterday, acting water comr., City Hall, 12 and Market Sts., Zone 2, plans combining pump. facilities of Chain of Rocks, Bissell's Point and Baden pumping by centralization at Chain of Rocks on Mississippi River, abandonment of masonry conduits between Chain of Rocks and Bissell Point plant, and construction pressure tunnel, drilled through solid rock below conduits to carry clear water to distribution, addn. pumps, etc. $12,400,000; 50 m.g.c. storage reservoir at Sublette Hill, $5,583,000; revising primary sedimentation basins, at Chain of Rocks, enlarging intake conduit, revising 3 basins for secondary sedimentation, and coagulation facilities, $922,000.

**†Mo., St. Louis**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., 3,000 gpm stand-by booster pump for deluge fire service (Lambert Field), Naval Air Station. $15,000.

**†Mont., Great Falls**—City, WW improvements incl. rein.-con. tank, watermains, Mont. 108-N. $294,610. **FWA.** E. Henen, City Engr. Falls, city engr. CD 4/10—ENR 4/13.

**Mont., White Sulphur Springs**—City, 1,000,000 m.g. reservoir. $25,000.

**†N. J., Atlantic City**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. pumping capacity, three 1,000 gal. pumps, addnl. fire hydrants, Naval Air Station. $22,000.

**†N. C., Edenton**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. well and 100,000 gal. elevated tank, fittings, Marine Corps Air Station. $50,000.

★**†N. C., New River (br. New Bern)**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply and sewage disposal sys., Camp Lejeune. $1,000,000.

**†Okla., Purcell**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. deep well, 1,600 ft. 6 in. watermain, Naval Air Free Gunnery School. $15,000.

**Pa., Trout Run**—Municipal Manufacturing Co., Wm. Insull, West Dist. Rep. in charge, First National Bank Bldg., Latrobe, repairing present wooden main with 22,000 ft. 6 in. c.i. watermain. $190,000.

**†R. I., Charlestown**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply, incl. 50,000 gal. reservoir, 200,000 gal. elevated tank, pump. plant and sprinkler sys. in hangar and galley, Naval Auxiliary Air Facility. $100,000.

**†R. I., Hyannis**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., 50,000 gal. reservoir, pump. plant and connections to existing water line, Naval Auxiliary Air Facility. $38,000.

**†R. I., Marthas Vineyard**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply incl. 50,000 gal. reservoir, 200,000 gal. water tank, pump. plant and sprinkler sys. in hangar and galley, Naval Auxiliary Air Facility. $100,000.

**†R. I., Nemport**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., exten. watermains, Naval Supply Depot. $50,000.

**†R. I., Prudence Island**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., pump. equip., pump. house, pipe connections and electric service, Naval Magazine, $25,000.

**†R. I., Quonset Point**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., 16 in. water service main, Naval Air Station. $150,000.

**†R. I., Westerly**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash., 25, D. C., addnl. water supply, incl. 50,000 gal. reservoir, 200,000 gal. elevated tank, pump. plant and sprinkler sys. in hangar and galley, Naval Auxiliary Air Facilities. $90,000.

**†S. C., Charleston**—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W.,

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